**Site Assessment CERCLIS & WasteLAN Data Entry Form**
**EPA Region III – Brownfields & Site Assessment Section (3HS34)**

*see reverse side for instructions*

Site Name: SOLID STATE SCIENTIFIC INC.

WasteLAN ID#: 03 DSN: PA-2443 EPA ID#: PAD002278331

## Site-Level Data

☐ Edit CERCLIS/WasteLAN Identifying Information (Site Name, Address, City, County, County ID, State, Zip Code)
*Explain:* _____

☐ Non-NPL Status (to override system-generated value): _____

☐ Site Merge: *Merge into this site: Name:* _____ *ID#:* _____

☐ Archiving: *It has been determined that no further Federal Superfund interest exists at this site based on available information. No further site assessment, remedial, removal, enforcement, cost recovery, or oversight activities are being planned or conducted at this time.*

☑ RCRA Deferral Audit Special Initiative: ☑ Lead Confirmed ☐ New Decision ☐ Further Superfund Assessment

☐ Vermiculite Special Initiative

## Action-Level Data

| ACTION (mark one or more) | LEAD | START DATE | COMPL. DATE | QUALIFIER |
|---|---|---|---|---|
| ☐ *b* Pre-CERCLIS Survey Assessment (HX) | | | / / | |
| ☐ *d* Site Discovery (DS) | F EP S | | / / | |
| ☐ *f* Preliminary Assessment (PA) | F EP S | / / | / / | H L N D DN A F W |
| ☐ *h* Site Inspection (SI) | F EP S | / / | / / | H L N D DN A F W |
| ☐ *j* Site Inspection Prioritization (SIP) | F EP S | / / | / / | H L N D DN A F W |
| ☐ *k* Site Reassessment (SR) | F EP S | / / | / / | H L N D DN A F W |
| ☐ *l* Expanded Site Inspection (ES) | F EP S | / / | / / | G L N D DN A F W |
| ☐ *g* Federal Facility PA Review (RX) | F EP S | / / | / / | H L N D DN A |
| ☐ *m* Federal Facility SI Review (TY) | F EP S | / / | / / | H L N D DN A |
| ☐ *n* Federal Facility ESI Review (TZ) | F EP S | / / | / / | G L N D DN A |
| ☐ *subaction (g/m/n)*: Returned to Fed. Facility | | | / / | |
| ☐ *o* Integrated ESI/RI (ESI/RI) | F EP S | / / | / / | G L N D DN A F W |
| ☐ *q* Hazard Ranking System Pkg (HR) | F EP S | / / | / / | O N D DN F W |
| ☐ *r* Integrated Assessment (EA) | F EP S | / / | / / | H G L N D DN A F W |
| ☐ *p* State Deferral (AQ) | SD | / / | / / | RS RT |
| ☐ *t* Other Cleanup Activity (VA) | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ St. Deferral / OCA sub-action (p/t) Comprehensive Site Investigation | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ Remedy Selection | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ Design | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ Construction | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ Post-Construction Maintenance | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ Short Term Cleanup | ___ | / / | / / | H L (*or may leave blank*) |
| ☐ Comfort/Status Letter | FE | / / | / / | |

(*SE, SR, S, SN, FF, RP*)

*type*: ☐ No Previous Federal SF Interest ☐ No Current Federal SF Interest ☐ Federal Interest ☐ State Action

| Authorization (SAM) Signature & Date | Data Control Clerk Signature & Date | Date Quality Coord. Signature & Date |
|---|---|---|
| 8/1/00 | 8/16/00 | 8/16/00 |

ORIGINAL
(Red)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 CHESTNUT BUILDING
PHILADELPHIA, PENNSYLVANIA 19107

9/9/88

SUBJECT: ENVIRONMENTAL PRIORITIES INITIATIVE (EPI) SITES IN CERCLIS

FROM: CORNELIUS F. CARR - CERCLIS DATA ADMINISTRATOR
SITE SUPPORT SECTION, 3HW26

TO: HENRIETTA WOODWARD - FILE ROOM, 3HW00

SITE NAME Solid State Scientific Inc

DUMP SITE # PA-2443

CERCLIS I.D. PAD002278331

THE ABOVE SITE IS AN ENVIRONMENTAL PRIORITIES INITIATIVE SITE (EPI). THIS SITE WILL BE PLACED IN CERCLIS ON THE DATE OF THIS MEMO.

THE EPI INITIATIVE IS A COORDINATED EFFORT BETWEEN THE THE SITE INVESTIGATION SECTION AND THE WASTE MANAGEMENT BRANCH (RCRA). RCRA SITES FROM HWDMS ARE PLACED IN CERCLIS FOR PRE-REMEDIAL INVESTIGATIVE WORK.

EPI SITES HAVE BEEN FLAGGED IN CERCLIS IN THE C2161 DATA WITH THE INITIALS "EP".

I REQUEST THAT YOU LOAD THIS SITE INTO THE PC BASED FILING SYSTEM AND PLACE THIS DOCUMENT, ALONG WITH ANY ATTACHEMENTS, INTO A FILE JACKET IN THE PA/SI FILE SECTION.

THE SITE INVESTIGATION CONTACT FOR THE EPI SITES AT THIS TIME IS JAMES HARPER WHO IS A MEMBER OF THE SITE INVESTIGATION SECTION.

ORIGINAL
(Red)

R-585-7-9-40

ENVIRONMENTAL PRIORITIES INITIATIVE
PRELIMINARY ASSESSMENT OF
SOLID STATE SCIENTIFIC
PREPARED UNDER

TDD NO. F3-8903-66
EPA NO. PA-2443
CONTRACT NO. 68-01-7346

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 17, 1989

NUS CORPORATION
SUPERFUND DIVISION

| SUBMITTED BY | REVIEWED BY | APPROVED BY |
|---|---|---|
| Charles Meyer For | Charles Meyer | |
| LISA LILLIS | CHARLES MEYER | GARTH GLENN |
| PROJECT MANAGER | SECTION SUPERVISOR | REGIONAL OPERATIONS MANAGER, FIT 3 |

ORIGINAL (Red)

## TABLE OF CONTENTS

**APPENDICES**

# SECTION 1

# 1.0 INTRODUCTION

## 1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-7346. This specific report was prepared in accordance with Technical Directive Document No. F3-8903-66 for the Solid State Scientific site, located in Montgomeryville, Montgomery County, Pennsylvania.

## 1.2 Scope of Work

NUS FIT 3 was tasked to conduct an Environmental Priorities Initiative (EPI) preliminary assessment of the subject site.

## 1.3 Summary

Solid State Scientific, Incorporated owned and operated a semi-conductor manufacturing plant at the subject site location in Montgomeryville, Montgomery County, Pennsylvania until early 1987. The date operations were begun at this plant is unknown, but they were begun at least by 1976.

The manufacturing process consisted mostly of an electroplating operation. Electroplating wastewater was treated at an on-site wastewater treatment facility and then discharged into a branch of Park Creek, which flows across the property. Solid State maintained an NPDES permit for the wastewater effluent; however, throughout most of Solid State's operation, the effluent failed to meet Pennsylvania Department of Environmental Resources (PA DER)-required water quality criteria for the permit.

Waste solvent generated in the electroplating process was stored in an underground storage tank. The remainder of Solid State's hazardous wastes, including unspecified wastes and small-quantity solvents from the plant, were stored in 55-gallon drums that were placed in an outside storage shed. Solid State, which operated under EPA ID No. PAD002278331, ceased operations at the Montgomeryville facility in 1986. At that time, Solid State also dismantled and removed the underground wastewater treatment tank.

In 1987, the Horsham Valley Development Corporation (HVDC) purchased one of the three lots that comprised the Solid State facility. The exact sizes of the lots are unknown. Prior to HVDC's purchase, a prospective buyer had installed five downgradient monitoring wells on the property. Subsequent sampling of the wells found volatile contamination in one well. The contamination was attributed to Solid State's underground solvent tank. HVDC, with approval from PA DER, removed the tank, piping, and any contaminated soils in 1987.

In May 1988, HVDC began leasing the property to the current facility occupant, EMCA, a Rohm and Haas Company. EMCA is a manufacturer of thick film pastes. Wastes generated by EMCA include small quantities of solvent and product wastes only.

Six solid waste management units (SWMUs) have been identified for the site: the acid treatment tank (building no. 2), the in-ground waste solvent tank (building no. 2), and the empty drum storage area (building no. 1) from the Solid State operation; the drum storage shed built by Solid State and later modified by EMCA; and the empty drums storage area and above-ground waste storage tanks from EMCA's operation. A more detailed description of each of the above-mentioned SWMUs and the wastes managed can be found in section 4.0 of the report.

# SECTION 2

## 2.0 THE SITE

### 2.1 Location

The former Solid State facility was located at Commerce Drive and Enterprise Road in Montgomeryville, Montgomery County, Pennsylvania (see figure 2.1, page 2-2). The site is located on the United States Geological Survey (U.S.G.S.) Ambler, Pennsylvania quadrangle at coordinates 40° 13' 42" north latitude and 75° 13' 37" west longitude. In relation to the northwestern corner of the same quadrangle, the site is 3.125 inches east and 3.81 inches south.[1]

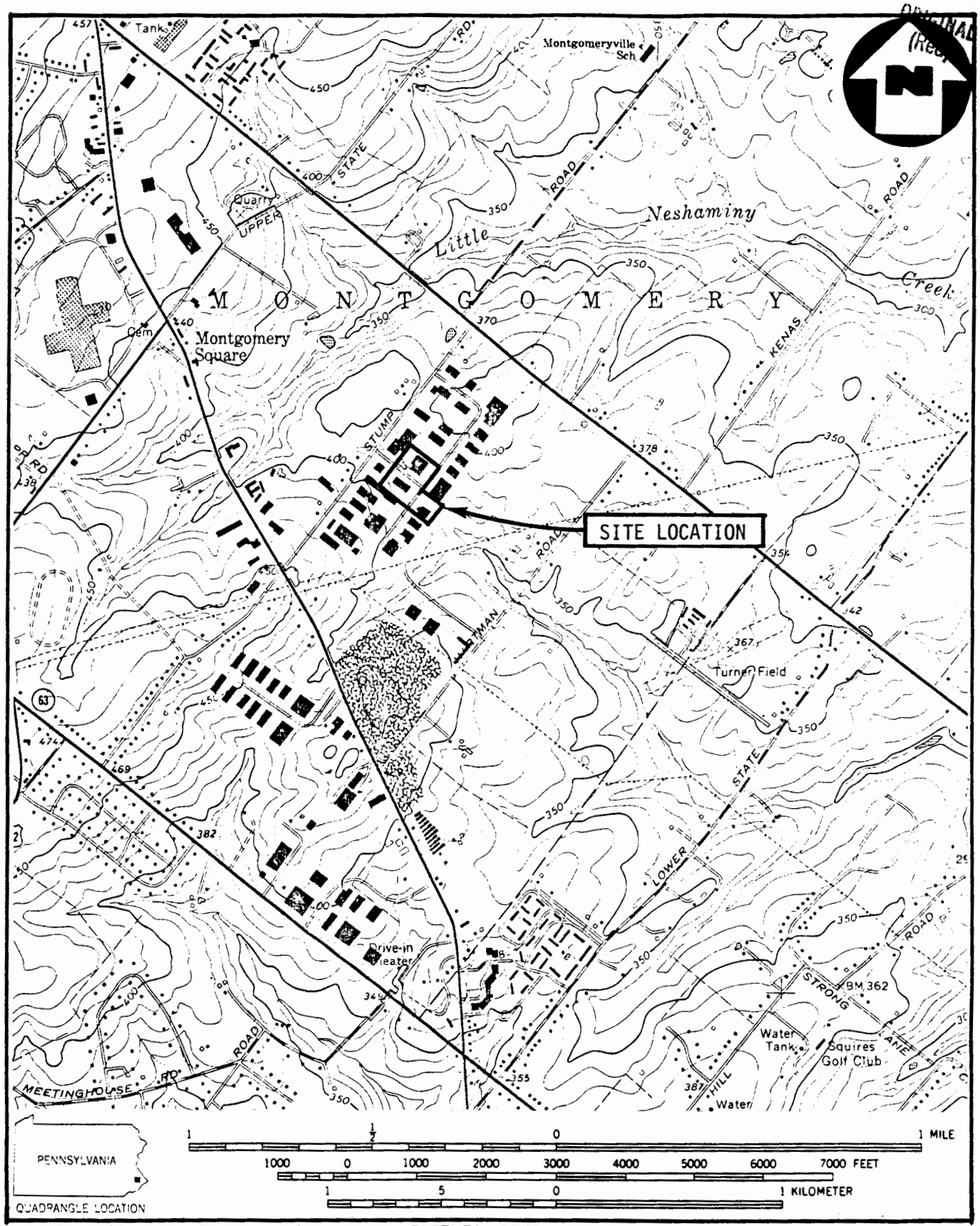
### 2.2 Site Layout

The former Solid State facility occupied an L-shaped property. The site is located in an industrial park and is surrounded by small industries in all directions. The facility consisted of three buildings with surrounding grounds: building no. 1 is to the south, building no. 3 is located west of building no. 1, and building no. 2 is north of building no. 3 (see figure 2.2, page 2-3).[2,3]

Building no. 1 is located on the eastern side of Commerce Drive. The building is centrally situated on the lot. A driveway and parking area wrap around the building. The building had been utilized for administrative offices. An empty drum storage area was located to the rear of the building. The property is currently occupied by the Lactona Company, and access is unrestricted.[2,3]

Building no. 3 is located on the southwestern corner of the intersection of Commerce Drive and Enterprise Road. The building is situated off-center, to the south on the lot. The northern half of the lot is a paved parking area. The building housed the manufacturing facilities The property is currently occupied by Mayco Precision Coated Abrasives, and access is unrestricted.[2,3]

Building no. 2 is the largest facility and lot. Located on the northwestern corner of Commerce Drive and Enterprise Road, the building occupies the central portion of the lot. Access to the property is unrestricted. The building contained manufacturing facilities, waste chemical storage areas, and a wastewater treatment plant during Solid State's occupancy. The building is currently occupied by EMCA, a manufacturer of thick film pastes. The 40,000-square-foot interior space was gutted and re-designed at the onset of EMCA's occupancy; therefore, a description of the plant layout during Solid State's operations cannot be provided. During Solid State Scientific's operations, the wastewater treatment plant is believed to have been the only SWMU within the plant building.[2,3,4]




SOURCE: (7.5 MINUTE SERIES) U.S.G.S. AMBLER, PA., QUAD.

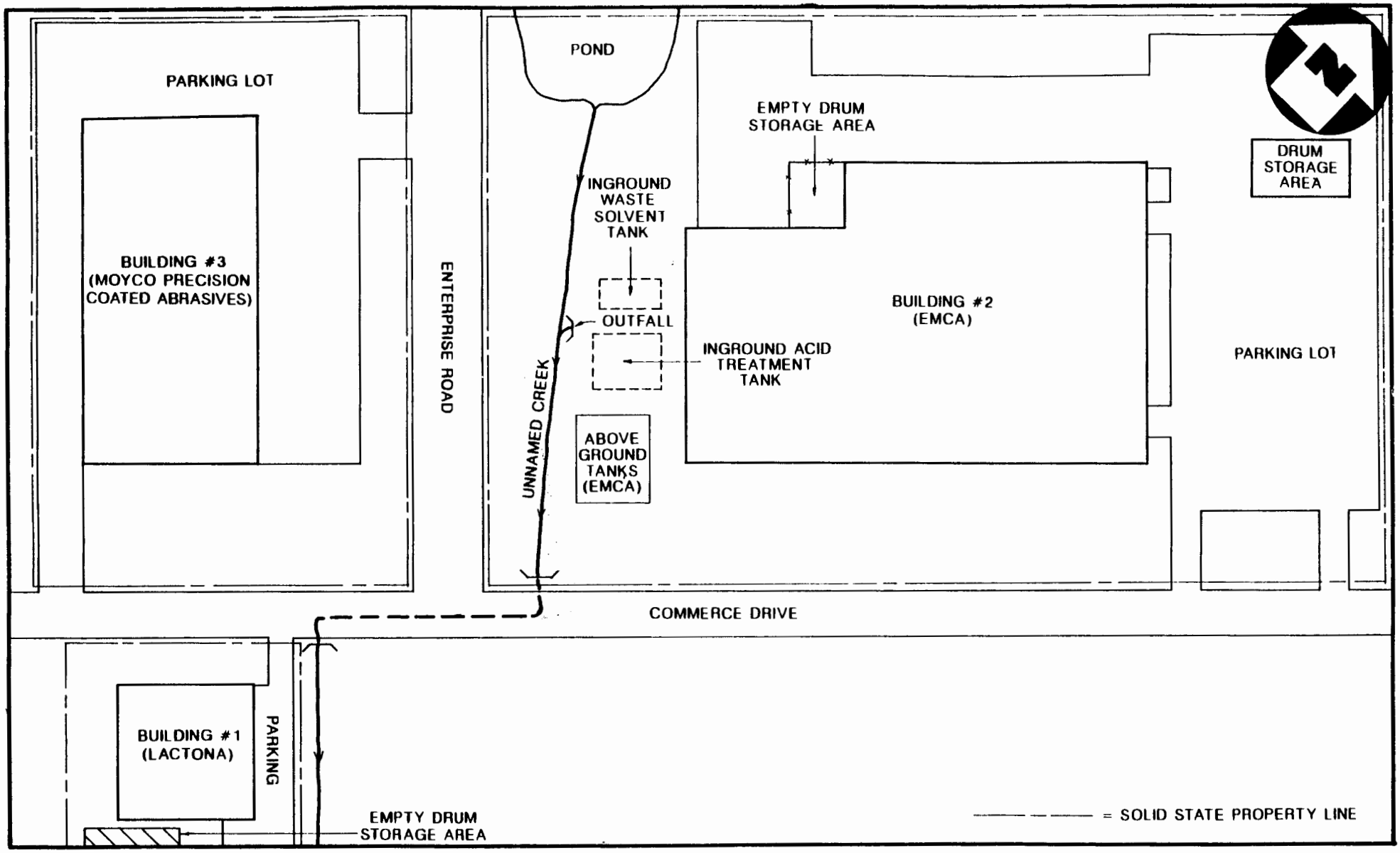
SITE LOCATION MAP

SOLID STATE SCIENTIFIC

SCALE 1: 24000

FIGURE 2.1

NUS CORPORATION




SITE SKETCH

SOLID STATE SCIENTIFIC

(NO SCALE)

FIGURE 2.2

NUS CORPORATION

A large paved parking lot is located adjacent to and to the north of building no. 2. In the far northwestern corner of the parking lot, approximately 100 feet from building no. 2, is a shed that is currently used for the storage of drummed raw materials and hazardous wastes. The fenced shed is 42 by 36 feet in size and has a detached roof. Entrance to the shed can be gained through a locking gate. The shed was built over the parking lot macadam and has a six-inch macadam dike around the perimeter. A second, smaller concrete pad with a four-inch concrete curb was constructed by EMCA within the shed. Hazardous materials are currently stored on the second pad. The remainder of the shed is currently utilized for raw material storage.[2]

Midway along the western face of the plant building is a small fence-enclosed area that is used by EMCA for the storage of empty 55-gallon drums.[2]

A pond is located on the southwestern corner of the property. The pond empties into a perennial creek that flows west to east across the southern end of the property. The stream flows under Commerce Drive through a culvert and re-emerges on the eastern side of Commerce Drive. A white open box marked the point of the former Solid State discharge pipe outfall.[2]

Between the creek and the southern face of the manufacturing building is a grassy open area; a waste solvent tank and an acid treatment tank for Solid State were located under this area. Both tanks have been excavated and removed. Approximately 100 feet east of this area is the former Solid State waste treatment building. The building, which includes a partially buried wing, currently houses EMCA's two above-ground waste storage tanks (see figure 2.2, page 2-3).[2,4]

The remainder of the property consists of grass-covered areas and paved parking lots.[2]

## 2.3 Ownership History

The building no. 2 property is currently owned by HVDC. Ownership of the building nos. 1 and 3 lots was not determined. HVDC leases the property to EMCA, a subsidiary of Rohm and Haas. HVDC purchased the property from Solid State Scientific, Incorporated in 1987. (EMCA occupied the facility on May 16, 1988.)[4]

Solid State Scientific, Incorporated owned and operated the three buildings and lots until 1987. The number of years that Solid State owned the property is unknown; however, records indicate that Solid State had occupied the site by at least 1976. Ownership prior to Solid State is also unknown.[4]

## 2.4 Site Use History

The current site occupant, EMCA, is a manufacturer of thick film paste for the electronics industry. Small quantities of specialty pastes are developed and produced at the facility according to client requirements. No other operator has occupied the facility under HVDC's ownership.[4]

Solid State was a manufacturer of semi-conductor devices. The manufacturing process included an electroplating operation that was the source of the majority of the wastes generated, including solvents and metal-laden wastewaters.[3]

It is not known what uses the site may have had prior to Solid State's operation and ownership.

## 2.5 Permit and Regulatory Action History

On August 18, 1980, Solid State Scientific, Incorporated filed a Notification of Hazardous Waste Activity with EPA for its Montgomeryville facility.[5] At that time, EPA assigned the company Identification No. PAD002278331.[6] Solid State submitted a Part A Hazardous Waste Permit Application to EPA for the subject facility in November 1980.[7] With this submission, Solid State began storing and treating wastes on site under interim status. On December 31, 1980, EPA acknowledged Solid State's Part A submission.[8] In early 1981, Solid State submitted two revisions to the 1980 Part A submission through correspondence to EPA: the addition of transportation of wastes between Solid State facilities and the deletion of three waste numbers, in a letter dated January 21, 1981; and the correction of two estimated waste quantities on the application, in a letter dated January 23, 1981.[9,10] On July 27, 1981, EPA completed the processing of the subject facility's application. Identified hazardous wastes that the facility could handle were classified as U002, U134, U154, U188, U072, U229, U239, U226, D001, and D002. Process codes that the facility could use were identified as S01, S02, and T01.[11]

After discussions with EPA, it was determined by Solid State that the facility's treated waste material, which had been monitored by NPDES Permit No. PA0050130 since January 14, 1982, could be excluded from the waste notification in the Part A submission (see appendix A).[12] In addition, several other small changes were required on the application.[12] Therefore, on January 19, 1982, Solid State submitted a new and amended Part A Hazardous Waste Permit Application to replace the 1980 submission.[3] On February 18, 1982, EPA acknowledged receipt of the new application and its affected changes. Identified hazardous wastes that the facility could now handle were classified as D002, D001, F002, F003, and F005. Process codes that the facility could use were identified as S01 and S02.[13]

On March 4, 1983, PA DER requested the submission of Part B of the Hazardous Waste Permit Application.[14] (It is not known whether the Part B was ever submitted by Solid State.) In 1984, Solid State requested a change to generator status only and requested the withdrawal of its Part A application. On December 14, 1984, PA DER informed Solid State that a closure plan for the facility must be submitted for review before the application could be returned.[15] Solid State submitted a closure plant for the Montgomeryville facility on December 21, 1984; the closure plan was received by PA DER on January 7, 1985.[16,17] Copies of the closure plan were forwarded to PA DER offices in Harrisburg, EPA Region III offices, and Montgomery Township officials for review.[17] (A copy of this closure plan can be found in appendix A.) On March 28, 1985, PA DER found the closure plan acceptable and returned Solid State's application. The facility was now considered a hazardous waste facility generator only and was no longer under interim status.[18] (Permit-related correspondence can be found in appendix A.)

PA DER file information indicated that at least two inspections of the facility during Solid State's operation were completed (see appendix C for hazardous waste inspection reports).[19] No Notices of Violation resulting from these or other inspections were found in site file information.

The Solid State facility held two permits during its operation at the Montgomeryville site: PA DER Air Cleaning Device Permit No. 46-399-048 and NPDES Permit No. PA0050130. Details regarding the air permit were unavailable. The NPDES permit was granted for an effluent discharge into the on-site branch of Park Creek from the facility's wastewater treatment system. According to PA DER Bureau of Water Quality file information, Solid State had continually exceeded accepted effluent water quality criteria from October 14, 1976 through January 16, 1980; during this time, the facility had maintained no discharge permit. On January 16, 1980, the NPDES permit was granted. Additional violations continued to occur from January until September 3, 1980, when Solid State submitted a revised NPDES Part I application to PA DER. A fine of $15,000 was levied and paid by Solid State for all violations from 1976 through 1980.[19,20]

After several attempts by the facility to improve and redesign the wastewater treatment system, with several different consultants, the illegal discharges continued. On January 14, 1982, a Consent Order and Agreement was signed by Solid State with PA DER. Among other things, the Consent Order noted that industrial waste discharges had exceeded several permit criteria, most notably fluorides, dissolved solids, zinc, and hexavalent chromium, since September 3, 1980.[19,21] (See appendix B for a copy of the Consent Order.)

Closure of the hazardous waste treatment and storage facilities at Solid State's Montgomeryville plant was completed on September 16, 1985; this closure was found to be in accordance with the approved plan.[22] On June 13, 1986, Solid State notified PA DER of the completion of closure of the building no. 2 generator location.[23] With each closure, engineer certifications were submitted to PA DER.[22,23] Solid State vacated the Montgomeryville location in 1986 and sold the property in 1987.[24]

On September 15, 1987, Dames and Moore, a private consultant, filed a Notification of Hazardous Waste Activity on behalf of its client, HVDC. HVDC had recently purchased the Solid State building no. 2 lot.[25] Contaminated soils from an underground storage tank had been identified earlier, when another party attempted to buy the property. The tank and contaminated soils were removed by HVDC (see section 2.6 for more details) . Dames and Moore filed the notification with EPA as a one-time generator for the removal and disposal of the soils in place on the property.[25,26]

The building no. 2 lot was leased to EMCA on May 16, 1988. No additional permit-related actions have occurred at the facility.[4]

## 2.6 Remedial Action to Date

After the final closure of the Solid State building no. 2 facility, but before its sale, an unknown prospective buyer of the lot installed five downgradient monitoring wells at the site. Subsequent sampling of the wells revealed volatile contamination in well no. 3. (The contaminant and concentration were not available.) It was surmised that the contaminants originated from Solid State's underground waste solvent storage tank. When HVDC purchased the lot in late 1987, HVDC decided to remove the tank and its piping. A work plan, submitted to PA DER on October 13, 1987, was approved for the removal of additional contaminated soils. Soil was removed to a contaminant level of 1 ppm. The soil removal was completed in January 1988. Approximately 250 tons of soil were removed from the site. See appendix D for information relating to this remedial work.[4,25,26]

In 1988, three additional upgradient monitoring wells were installed by Rohm and Haas, the parent company of EMCA, for in-house sampling and tracking. The site is currently not involved in any public agency monitoring programs.[4]

No additional remedial actions are known to have occurred at the site. No information regarding any Solid State remedial activities was available.

# SECTION 3

## 3.2 Surface Waters

Most surface water runoff from the site would enter the municipal sewer system via either on-site drains to the sanitary system or through street storm sewers. A small percentage of heavy precipitation runoff might enter the on-site pond and creek. The pond, located in the southwestern corner of the building no. 2 lot, empties into an unnamed perennial stream (a branch of Park Creek). Solid State maintained a discharge into this stream. The stream flows approximately 1,600 feet, passing under Commerce Drive, to converge with the intermittent headwaters of Park Creek. Park Creek, a perennial waterway, flows west to east across Montgomery County to eventually converge with Little Neshaminy Creek, approximately 6.38 downstream miles. Several other small tributaries feed Park Creek along its route. Park Creek and Little Neshaminy Creek are both used for recreational purposes, such as fishing. Park Creek and Little Neshaminy Creek are listed as warm-water fisheries.[1,2,4,27,36]

The closest wetland to the site is located 0.5 mile southwest of the facility. The wetland is approximately 60 acres in size and is considered a palustrine, forested, broad-leaved, deciduous temporary wetland. Park Creek flows through this area and is the cause of the wetland designation.[37]

## 3.3 Hydrogeology

The geologic and hydrogeologic conditions in the study area were researched as part of the site investigation. A preliminary literature review was conducted to determine surface and subsurface geologic conditions, soil character, and the status of groundwater transport and storage.

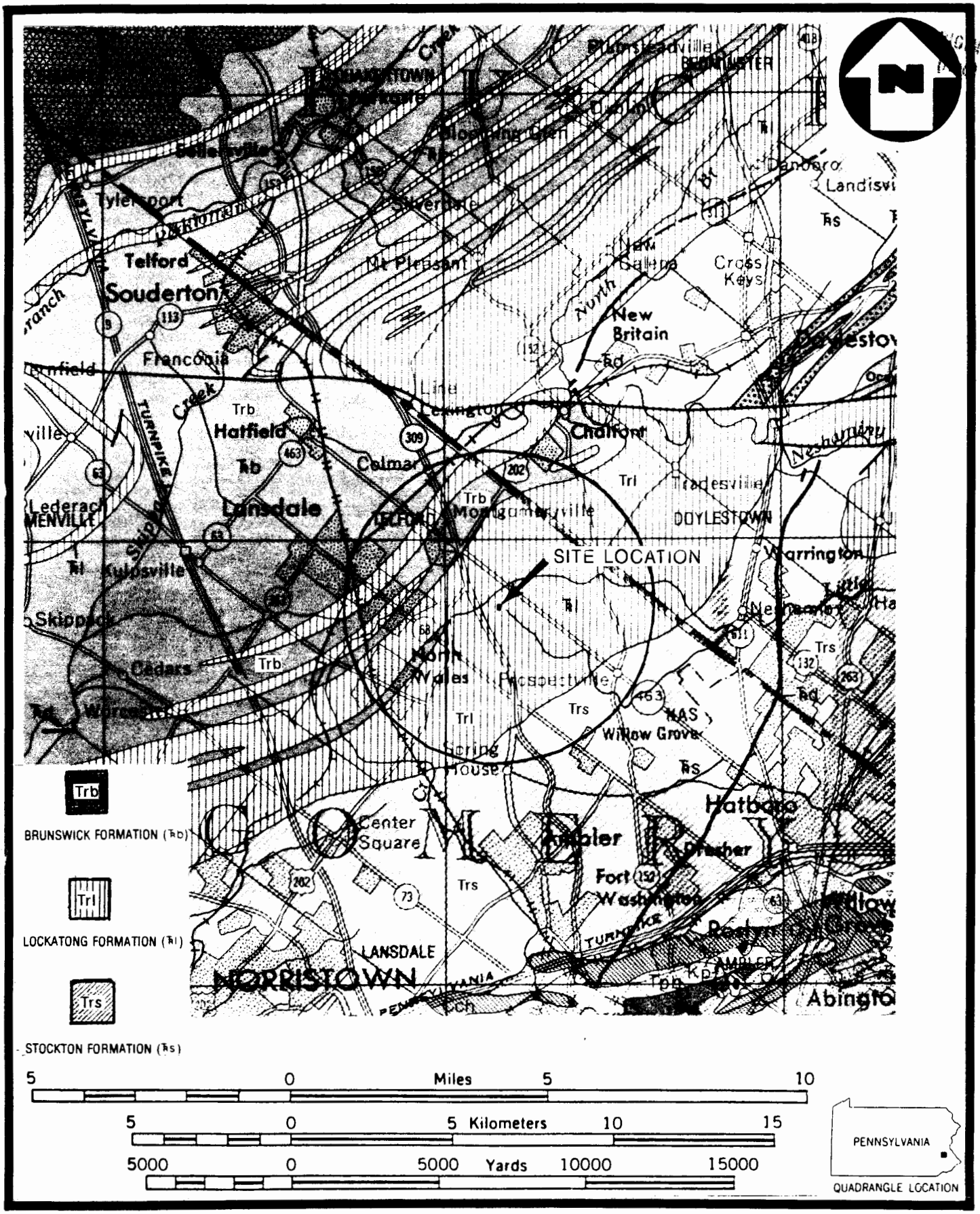
### 3.3.1 Geology

The Solid State Scientific site is situated within the Triassic Lowlands Section of the Piedmont Physiographic Province.[38] The rocks of this Triassic Section are more commonly known as the Newark Group, a 16,000- to 20,000-foot section of nonmarine sedimentary rocks and associated intrusive and extrusive basic rocks.[39] The Newark Group was deposited in the Newark Basin, which was part of a fracture system initiated by the widening of the Atlantic Basin and the separation of the continents in Mesozoic time.[39,40] The site area has a dendritic drainage pattern and a topography of broad, shallow valleys and rolling hills.[41]

The structural history of the Newark Basin can be applied to all six Triassic rift valleys that stretch from Nova Scotia to North Carolina. This half-graben basin was created during the Palisade Disturbance, the orogenic event that ended the Appalachian Orogeny in late Triassic time. The shape and extent of the original depositional basin were very similar to the present form of the outcrop belt and closely follow the regional grain of Appalachian structures.[39] Continuous downfaulting along the northwestern border has produced a regional dip of 10 to 20 degrees northwest.[41]

The site is underlain by the Triassic age Lockatong Formation (see figure 3.1, page 3-4).[34] The Lockatong Formation is composed of alternating detrital and chemical sediments. The detrital sediments consist of shales succeeded by platy dark carbonate-rich mud and argillite with the occasional ripple-bedded siltstone and sandstone. The chemical sediments consist of dark gray-black dolomitic mudstones succeeded by gray carbonate-rich argillite. The fossil content of the formation includes fish, labyrithodont amphibians, freshwater ostracods, and mollusks. These fossils, in addition to the cyclic detrital and chemical sediments, suggest a lacustrine paleoenvironment for the Lockatong. This ancient lake was stable for millions of years, although there were repeated expansion and waning of its areal extent.[39]

The Lockatong Formation is contemporaneous with the lower-middle portion of the Brunswick Formation. This means that, while the Lockatong Formation was being deposited in the center of the Newark Basin, early Brunswick Formation sedimentation was occurring at the basin margins. When the Lockatong lake dried up, Brunswick Formation sedimentation continued throughout the basin. Given the unique depositional environment of the Lockatong, its thickness varies widely. Estimates range from 3,750 feet near the Delaware River (17 miles northeast of the site) to only tens of feet west of Phoenixville (16 miles southwest of the site), where the formation pinches out.[39]




SOURCE: GEOLOGIC MAP OF PENNSYLVANIA

FIGURE 3.1

# GEOLOGIC MAP

NUS CORPORATION

Cropping out one mile northwest of the site is the late Triassic age Brunswick Formation.[34] The Brunswick Formation consists of a monotonous succession of reddish-brown mudstone and siltstone with local beds of claystone and fine-grained sandstone. The formation also contains abundant dinosaur footprints along with bony fish, reptilian, and plant fossils. These fossils suggest a broad mudflat paleoenvironment with wandering water courses and weak external drainage. Long, warm climatic cycles produced episodes of a dry, oxidizing environment (resulting in thick sequences of ferric-oxide-rich mud) alternating with moister periods (resulting in dark gray mud accumulation). The abundant ferric-oxide pigment in the mud suggests considerable weathering in the northwest upland source area. The thickness of the Brunswick is approximately 6,000 feet.[39]

Stratigraphically older than the Brunswick and Lockatong Formations and cropping out 2.5 miles southeast of the site is the Triassic age Stockton Formation.[34] The Stockton Formation consists of a lower conglomerate arkose member, a middle arkosic sandstone member, and an upper mudstone member. The lower yellow gray conglomerate deposits consist of relatively dispersed, moderately rounded clasts of quartz, quartzite, limestone, and feldspar. These clasts, averaging one inch in diameter, are set in a poorly sorted arkosic matrix. The middle sandstone member is a fine- to medium-grained, light yellowish-gray to pale reddish-brown, fairly well-sorted arkosic sandstone. The upper mudstone is reddish-brown in color and is feldspathic. The abundant feldspar in the Stockton Formation implies a continuous supply from a soda-rich, metamorphosed Paleozoic source east and south of the Newark Basin. The erosion of these crystalline eastern and southern highlands spread Stockton sediments across the basin, forming extensive flood-plain deposits. Fossil fauna such as ferns, conifers, ginkos, mollusks, labyrinthodont amphibians, and phytosaur reptiles suggest an extensive fluvial and flood-plain paleoenvironment for the Stockton. The thickness of the formation reaches a maximum of 6,000 feet at the Montgomery-Bucks County line (2.0 miles northeast of the site).[39]

### 3.3.2 Soils

The site is underlain by a Made land soil. This soil (MeB - sloping) is a result of altering and mixing soils formed in material weathered from shale and sandstone. This land type is mainly nearly level and gently sloping and is likely to be found on low-lying flats. The soil is a dusky-red to yellowish-brown shaly silt loam to channery sandy loam with some areas along the Schuylkill River consisting of gravelly silty clay loam mixed with shale. The soil has a moderate to very slow permeability, a moderate to very low available moisture capacity, and a pH range of very strongly acid to medium acid (4.5 to 6.0).[42]

### 3.3.3 Groundwater

The Lockatong Formation has a low permeability and a low porosity.[43] The capacity of the Lockatong to store and transmit water is very low; well yields range from 4 to 40 gallons per minute (gpm), with an average yield of about 7 gpm.[41] In Bucks County, a total of 43 wells have a yield range of 2 to 25 gpm, with an average yield of 10 gpm. The formation has a low specific capacity (0.1 to 1.88 gpm per foot).[44]

The expected direction of shallow groundwater flow is to the southeast, toward an unnamed tributary of Park Creek, although there may also be a minor component of flow to the north, toward Little Neshaminy Creek. Flow direction is based upon topographical observations and the role of streams as discharge points for groundwater.

## 3.4 Climate and Meteorology

According to climatological data obtained for Philadelphia, Pennsylvania, based on the period from 1951 to 1980, the following is offered: The average annual temperature is 54.3°F. The coldest month is January, with a mean temperature of 31.2°F, and the hottest month is July, with a mean temperature of 76.5°F.[45]

The average annual precipitation is 41.42 inches. The month with the highest precipitation is August, with 4.10 inches; the lowest is February, with 2.81 inches.[45] A 1-year, 24-hour rainfall will produce 2.6 inches of rain.[46] The mean annual lake evaporation for the area is 34.5 inches, resulting in a net moisture gain of 6.92 inches.[45,47]

## 3.5 Land Use

The subject facility is located in an industrial park in a moderately industrialized area. A large active quarry is located approximately 0.5 mile south of the plant. A few scattered homes are located within a one-mile radius north, east, and south of the site. A new development of single-family homes has recently been constructed along Stump Road, one block northwest of Solid State's property.[2]

Land use beyond a one-mile radius of the site, but within the three-mile-radius study area, consists of rural single homes, newer housing developments, and industrial "pockets" to the north, east, and south, and the communities of Lansdale and North Wales to the west.[1,2,27]

## 3.7 Critical Environments

No critical environments are expected to be found within the three-mile-radius study area. Two federally listed birds are expected to be found as transient species in the study area. They are the bald eagle (Haliaeetus leucocephalus) and the peregrine falcon (Falco peregrinus).[49]

# SECTION 4

## 4.0 WASTE TYPES AND QUANTITIES

Hazardous waste generated on site during Solid State's operations was classified by the facility as including the following EPA RCRA waste identification numbers: D001, D002, F002, F003, and F005. The wastes codes presented were derived from the facility's 1982 amended Part A Hazardous Waste Permit Application and may not totally represent all wastes that were present on site.[3]

Hazardous wastes generated on site during EMCA's current operations have been classified by the facility as including the following EPA RCRA waste identification numbers: D008 and F003. The waste codes presented were provided by an EMCA representative during the FIT site visit and may not totally represent all wastes present on site.[4]

The majority of wastes generated by Solid State were associated with the electroplating operation at the Montgomeryville facility. A 750-gallon wastewater treatment tank was listed by Solid State as having a treatment capacity of 85,000 gallons per day. Treated effluent was discharged to a branch of Park Creek under NPDES Permit No. PA0050130.[11,12]

According to Solid State's amended (and final) 1982 Part A Hazardous Waste Permit Application, the following process design capacities, quantities, and types of wastes existed at the facility: 5,500 gallons of contained wastes and 2,500 gallons of tank-stored wastes (design capacities); an estimated 230 tons of D002 waste were generated annually in addition to 3.11 tons of D001 wastes, 1.2 tons of F002 waste, 3 tons of F003 waste, and 1 ton of F005 waste. Specifics about common or commercial waste names, quantities, and waste disposal practices were not available. Waste solvents for the electroplating operation were stored in a 55-gallon steel in-ground tank. Additional hazardous wastes were placed in sealed 55-gallon drums and stored prior to disposal off site. Except for one instance, names of wastes haulers and manifests were not available. Blackwood Chemical, of New Jersey, was noted in state file information as the transporter of materials from the waste solvent tank.[3,12,19]

The current facility operation, EMCA, is a small-quantity generator. No more than two 55-gallon drums of hazardous wastes are generated during a 90-day disposal period. This waste consists of one drum of listed F003 solvent waste and one drum of characteristic D008 product waste. The drummed wastes are removed off site by Rollins every 90 days or less. In addition, nonhazardous process aqueous and powder wastes are each stored in two 2,300-gallon above-ground storage tanks. These tanks are emptied every 6 to 10 weeks by Matlack, which transports the waste to Deepwater for incineration. Manifests are maintained on site for all waste removals. Solid waste is hauled off site by O'Hara Sanitation.[4]

## 4.1 Solid Waste Management Units

Six SWMUs have been identified for the facility. Three of the SWMUs existed only during Solid State's operations, two exist only during EMCA's operation, and one SWMU, which was constructed and used by Solid State, was later modified and is currently being utilized by EMCA.[2,3,4] The six SWMUs are as follows:

Solid State Scientific

- acid treatment tank (building no. 2)
- in-ground waste solvent tank (building no. 2)
- empty drum storage area (building no.1)

Solid State Scientific and EMCA

- Drum storage shed

EMCA

- empty drums storage area
- above-ground waste storage tanks

### 4.1.1 SWMU No. 1

**Acid Treatment Tank (Building No. 2)**

A 750-gallon in-ground tank was utilized by Solid State for the treatment of plant wastewaters, including electroplating wastes. Information regarding the operation of a treatment system at the facility was unavailable for this report. It is believed that the tank was used in conjunction with a treatment plant set-up. The treatment plant building still stands on the southern portion of the lot. The tank was located approximately 100 feet west of the treatment plant, underground. The system apparently utilized limestone filters and flocculants to neutralize and precipitate acids and metals, respectively, from the wastewater.[2,3,19]

Solid State maintained NPDES Permit No. PA0050130 for discharges from the wastewater treatment system to a branch of Park Creek. After a series of violations and fines by the PA DER Bureau of Water Quality in 1980, for failure to meet effluent criteria, Solid State retained several different consultants, at different times, to redesign the system in order to better meet the established water quality criteria for the discharge. The eventual outcome of the redesign is uncertain. The tank was apparently removed before Solid State halted operations at this facility.[3,4,19,20,21]

Date of Start-Up

Information regarding the acid treatment tank's implementation was unavailable. From state file information, it is believed that the tank was in use by at least 1979.[19]

Date of Closure

Information regarding closure of this unit was not available. It is believed the tank was removed at some time in the mid-1980s, before Solid State vacated the facility.[4]

Wastes Managed

Electroplating wastes were treated by this unit. Treatment included neutralization and flocculation. The following EPA RCRA waste identification numbers were noted on the facility's 1980 Part A Hazardous Waste Permit application: U002, U072, U134, U154, U188, U226, U229, and U239. The application also noted the use of process code T01 at a design capacity of 85,000 gallons per day. The above notifications were deleted from the facility's amended 1982 Part A Hazardous Waste permit Application when it was determined that these items were monitored under the NPDES permit program and need not be included in the application. Information regarding the exact nature and quantities of waste managed by this unit was not available.[3,12]

Release Controls

No information was available that could detail containment structures associated with this unit. The unit consisted of a 750-gallon underground steel tank.[3]

History of Releases

No releases from this specific unit have been reported. Illegal discharges exceeding allowable water quality criteria for fluorides, dissolved solids, phenol, zinc, hexavalent chrome, and pH were detected in the permitted effluent from the tank to a branch of Park Creek. These violations occurred between at least 1976 and 1980, according to PADER Bureau of Water Quality records.[19,20,21]

The unit was removed prior to 1987.[4] No evidence of spills or releases was observed during the FIT visit.[2]

### 4.1.2 SWMU No. 2

**In-Ground Waste Solvent Tank (Building No. 2)**

A 550-gallon steel, underground storage tank was utilized by Solid State for the storage of waste solvents before disposal. The tank was located on the southern portion of the building no. 2 lot, approximately 25 feet west of the acid treatment tank. The tank was emptied by Blackwood Chemical, of New Jersey. The tank stored waste solvent from the facility's electroplating operation. The tank was filled via piping from within the building. The tank and piping were removed sometime in 1987.[2,3,19]

Date of Start-Up

No information regarding the start-up date of this unit was available.

Date of Closure

No information regarding the specifics of closure for this unit was available. Information referring to the removal of the tank indicate a closure of the unit in 1987. The unit was excavated and removed by the current owner, HVDC.[4,26]

Wastes Managed

The tank was used to store waste solvents from a facility electroplating operation. In Solid State's 1982 permit application, wastes were categorized as EPA RCRA waste identification numbers D001, F002, F003, and F005.[50]

Release Controls

Waste solvents were stored in a 55-gallon underground steel tank. The wastes were piped into the tank via piping from within the building. Information regarding any additional containment measures for this unit was not available.[19]

History of Releases

According to PA DER file information, an unknown prospective buyer installed five monitoring wells at the building no. 2 property after Solid State's vacancy of the site. Subsequent groundwater samples revealed volatile contaminants in well no. 3. PA DER personnel believe that the solvents originated from the underground waste solvent tank. In addition to removal of the tank and its piping, PA DER, in concurrence with the new property owner's (HVDC) consultant, Dames and Moore, approved a work plan for the removal of additional contaminated soils from the well no. 3 area.[25,26]

No additional release incidences are known to have occurred with this unit. No evidence of spills or releases was observed during the FIT visit.[2]

### 4.1.3 SWMU No. 3
### Empty Drum Storage Area (Building No. 1)

An empty drum storage area was maintained by Solid State in the southeastern corner of the building no. 1 lot. The drums were cleaned and stored before removal.[3,19]

Date of Start-Up

No information was available regarding the operation of this unit.

Date of Closure

No information was available regarding the operation of this unit. The property and building are currently occupied by a different owner. Solid State vacated the facility sometime in 1986 or 1987.[2,24]

Wastes Managed

This unit was utilized for the storage of empty, clean 55-gallon drums. No hazardous wastes were associated with this area.[3,19]

Release Controls

Information regarding containment measures was not available. The unit was used for the storage of empty, clean 55-gallon drums. No hazardous wastes were stored in this area.[3,19]

History of Releases

No evidence or records of releases were found for this area.

### 4.1.4 SWMU No. 4
### Drum Storage Shed

The drum storage shed is approximately 42 by 36 feet in size; it is located on the western side of the parking area, north of the plant building on lot no. 2. The unit is used for the storage of raw materials, as well as containerized hazardous wastes. The unit was constructed by Solid State and modified by EMCA; each operator has utilized the shed for drummed materials storage. The area, built over the parking lot macadam surface, is enclosed within a 10-feet-high fence and locking gate; a detached roof was added to the structure by EMCA. Raw materials are stored on the macadam surface, which has a six-inch macadam curb outlining the perimeter of the area. A smaller, 16-foot elevated concrete pad with a 4-inch curb was constructed by EMCA within the shed enclosure for the additional containment provided for storage of hazardous wastes. EMCA also utilized the second containment area for the dispensing of raw materials.[2,3,4]

Date of Start-Up

The unit has been active during both Solid State and EMCA operations. Information regarding the date of start-up under Solid State was not available; EMCA began operations at the facility in May 1988.[3,4]

Date of Closure

The unit is currently in operation. A closure plan for the Solid State facility, including the drum storage shed, was submitted in December 1984. Information regarding any closure activities for this unit, such as the removal of all wastes and thorough cleaning of the area, was not available. No plans for closure have been made by EMCA.[3,4,16]

Wastes Managed

Unspecified wastes generated by Solid State's operations were stored in this area. The wastes were placed in 55-gallon steel drums prior to storage in this unit. Solid State categorized the generated wastes at the facility as characteristic wastes D001 and D002 or listed wastes F002, F003, and F005.[3,12,50]

EMCA generates and stores no more than one 55-gallon drum of solvent waste and one 55-gallon drum of product waste per 90-day disposal period. An EMCA representative categorized the wastes as listed waste F003 and characteristic waste D008.[4]

Release Controls

All wastes stored in this area are contained in sealed 55-gallon drums. Secondary containment is provided by a macadam surface, a continuous six-inch macadam berm along the perimeter, fencing to restrict access, and a roof to control rainwater entry. No drains exist in the contained area.[2,4]

In addition to constructing the roof included above, EMCA modified Solid State's existing storage shed by constructing an additional (tertiary) containment area within the fenced enclosure. An elevated 16- by 16-foot concrete pad with 4-inch-high concrete perimeter curbing was situated in the northeastern corner of the shed. EMCA utilized this pad for the storage of hazardous waste and the dispensing of raw materials; containers of raw materials are hand-trenched onto the concrete pad before the materials are dispensed with a pump.[2,4]

No estimate of the containment volume of the area is available.

History of Releases

Information regarding any spills or releases during Solid State's operation was not available.

According to an EMCA representative, no releases have occurred in this unit since EMCA's operation. No evidence of spills or release was observed during the FIT visit.[2,4]

### 4.1.5 SWMU No. 5
### Empty Drums Storage Area

Located in a recessed area along the western facade of the EMCA plant building, this unit consists of an approximately 5- by 5-foot concrete pad, fenced on its 2 open sides and used for the storage of empty 55-gallon drums. It is not known whether this area was also used during Solid State's operation (nor is it so believed). EMCA's bulk materials distributor reclaims the empty drums; no drums are reused by EMCA on site. The drums are stacked two or three deep while awaiting removal in this area.[2,4]

Date of Start-Up

EMCA began operations at this facility in May 1988; the exact date this unit became active is unknown.[4]

Date of Closure

The unit is currently active. No plans for closure have been made.[4]

Wastes Managed

This unit is used for the storage of empty 55-gallon drums. No hazardous wastes are associated with this area.[4]

Release Controls

This area is used to store empty 55-gallon drums. No hazardous wastes are stored in this area. The unit consists of a fenced concrete pad.[2,4]

History of Release

No release from this area has been reported. No evidence of spills or releases was observed during the FIT visit.[2,4]

### 4.1.6 SWMU No. 6

### Above-Ground Waste Storage Tanks

Each department in the production area of the plant utilizes a sump to collect aqueous and powder wastes. The wastes are transported, separately, via an above-ground piping system, to two 2,300-gallon above-ground storage tanks. The two waste streams are never mixed. The two waste storage tanks are situated partially inground and are located in the former Solid State treatment building, approximately 50 feet south of the plant building. Neither waste stream contains any hazardous materials. Every 6 to 10 weeks, the tanks are emptied, and the wastes are transported off site by Matlack to the deepwater incinerator. No aqueous process wastes enter the public sanitary system.[2,4]

Date of Start-Up

The above-ground waste storage tanks and the associated waste collection system were put in place with the start of EMCA's operations at the subject facility, in May 1988.[4]

Date of Closure

This unit is currently in operation. No plans for closure have been made.[4]

Wastes Managed

Each storage tank handles either aqueous process wastes or powder process wastes. The waste streams are not mixed. No aqueous process wastes enter the public sanitary sewer lines into the building. A sump and above-ground piping system direct the wastes from the individual production areas and outside the building to the respective storage tank. The tanks have a capacity of 2,300 gallons each. The tanks are emptied every 6 to 10 weeks for off-site transport and disposal. According to site representatives, neither of the waste streams contains any hazardous constituents.[2,4]

Release Controls

Process wastes are stored in 1 of two 2,300-gallon, above-ground tanks. The tanks are filled via above-ground piping from sources from within the plant. The tanks themselves are situated partially inground. The two tanks are located in the former Solid State treatment building; therefore, the units are situated within concrete-lined encasements. The building has a roof over the concrete walls. Secondary containment is provided by the design of the former treatment building.[2,4]

History of Releases

No releases from this area have been reported. No evidence of spills or release was observed during the FIT visit.[2,4]

# SECTION 5

## 5.0 FIELD TRIP REPORT

### 5.1 Summary

On May 9, 1989, NUS FIT 3 personnel Lisa Lillis and David Spencer conducted a preliminary assessment of Solid State Scientific/EMCA in Montgomeryville, Pennsylvania. FIT 3 was accompanied on site by Charles Williams, of EMCA. Weather conditions during the visit were sunny, with a temperature of 48°F. Photographs were taken on site (see figure 5.1, page 5-3, and the photograph log, section 5.4).

### 5.2 Persons Contacted

#### 5.2.1 Prior to Field Trip

Josephine Histand
Environmental Engineer
Sprague Electric Company
3900 Welsh Road
Willow Grove,PA 19090
(215) 657-8400

Glenn R. Baker, Jr.
Property Manager
Horsham Valley Development Corporation
Lotz Property Management
200 Gibralter Road, Suite 124
Horsham, PA 19044
(215) 674-5456

Charles Williams
Safety, Health and Environmental
Product Integrity Manager
EMCA, A Rohm and Haas Company
160 Commerce Drive
Montgomeryville, PA 18936
(215) 855-1000

Carol Quigley
PA DER
1875 New Hope Street
Norristown, PA 19401
(215) 270-1948

#### 5.2.2 At the Site

Charles Williams
Safety, Health and Environmental
Product Integrity Manager
EMCA, A Rohm and Haas Company
160 Commerce Drive
Montgomeryville, PA 18936
(215) 855-1000

Glenn R. Baker, Jr.
Property Manager
Horsham Valley Development Corporation
Lotz Property Management
200 Gibralter Road, Suite 124
Horsham, PA 19044
(215) 674-5456

## 5.3 Site Observations

- The background reading on the HNU was 0.2 ppm. No readings above background were recorded during the site visit.

- The mini-alert was set at the X1 position. No readings above background were recorded during the site visit.

- The building no. 1 lot consisted of a single building and was occupied by the Lactona Company at the time of the FIT site visit.

- The building no. 3 lot consisted of a single building and large parking area. This corner lot was occupied by Mayco Precision Coated Abrasives at the time of the FIT site visit.

- The building no. 2 lot was occupied by EMCA, a Rohm and Haas Company. The facility's offices, laboratories, and manufacturing operations were located in one building in the center of the property. A storage shed was located off the northwestern corner of the building. Two above-ground tanks were situated in a former treatment plant building south of the operations building.

- Each area of the plant had a sump. Aqueous wastes and waste powders were pumped via above-ground piping to two outside storage tanks.

- A 10-feet-high, fenced enclosure, with a roof, was used as a storage shed. The shed had a macadam surface with dike and a smaller concrete-diked pad for drum storage within the larger area. No drains were observed in this area.

- Empty 55-gallon drums were stored in a fence area along the western side of the building.

- Two above-ground aqueous process tanks were located in the former Solid State wastewater treatment building.

- A former discharge pipe outfall "box" was observed on the northern bank of the creek.

- No stressed vegetation or stained soils were observed.

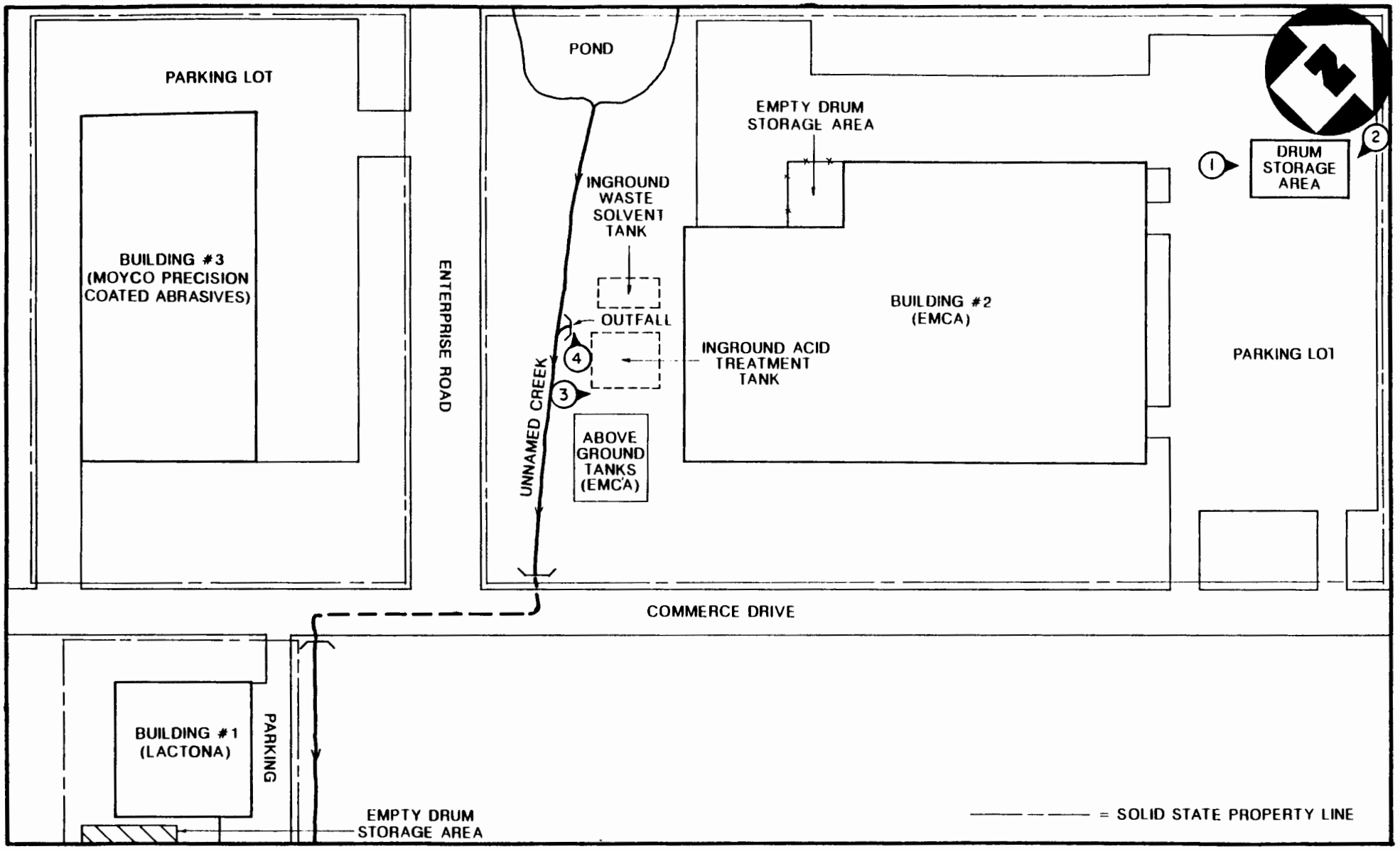





PHOTO LOCATION MAP

SOLID STATE SCIENTIFIC

(NO SCALE)

FIGURE 5.1

NUS CORPORATION